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THE MUSHROOM GROWERS'
ASSOCIATION

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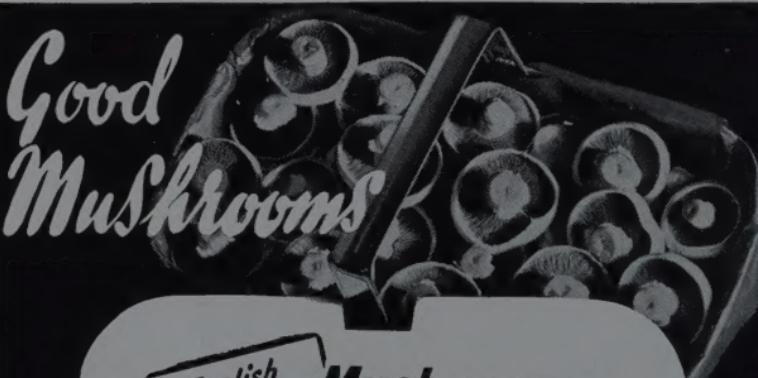
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EDITORIAL

INCREASED HYGIENE THE ANSWER

The full scale investigation which has now been set in motion, in an effort to find both the cause and the cure for the devastating "brown disease" which has stopped production on one or two farms and which has affected the output on a number of others, will be welcomed by growers large and small.

It has become quite apparent that this disease, which is not in any way connected with the *bona fide* brown mushrooms, can quietly build itself up on a farm until, almost without full warning, not only is the actual crop affected in its first flush but the mycelium run, too, goes under to the attack.

Let us get this quite clear. This is a disease without doubt and already it is being tied to the dreaded La France, so named because it was first found by Dr. Sinden on a farm in America owned by the La France brothers. Whether or no, in the final diagnosis, it will be found to be La France remains to be seen but certain it is that the affect is the same—a complete failure of production and all that can mean.

Already one lesson stands out clear and strong—that this and any disease must be tackled when it is first noticed. With that lesson comes a second and equally obvious—growers must always be on the alert, must always keep a constant watch on their crops so as to detect, at the very outset, any disease no matter how remote, at first sight, appears the danger.

One thing however emerges crystal clear—the need for even more stringent hygiene during and between crops. This battle between cleanliness and disease is never ending and in that lies some danger from the set routine in which hygiene programmes are carried out on many farms. Routine is an excellent thing in such matters but it is not and never will be the end all and be all of everything to do with farm contamination. A real and thorough spring clean, every now and then, would benefit most farms.

One thing is certain. This disease, whatever it is, will be conquered. The cause and the cure are bound to be found. It is only a matter of time. Meanwhile, increasing vigilance on the hygiene front must be the watchword.

WRA

Southport Conference:

PROBLEMS FACING THE BEGINNER

By Fred. C. Atkins



The initial problem—whether or not to be a mushroom grower—has already been resolved by the beginner. He has made up his mind to try to grow mushrooms on a commercial scale. Established growers to-day must wonder how he came to that decision. Obviously he is mad—or mad enough to pass unnoticed in a crowd of mushroom growers. But what on earth persuaded him that mushrooms were a crop in which complete ignorance and inadequate capital gave promise of Success? Apart from irresponsible advertising, I mean, Let us consider some of the implications:

1. Mushrooms are grown from **spawn**. The making of spawn is not a difficult process; the essential details were published over 50 years ago. Since most spawn makers are human, there are from time to time instances of

carelessness in manufacture, and quality varies; and sometime strains are changed. Yet from the most surprising quarters sometimes comes the cry: "Don't blame the spawn!"

The primary reason why so few growers or groups of growers make their own spawn is not that it is at all complicated, but because they realise that the maintenance and improvement of strains are highly complex problems which no-one fully understands. Indeed, there has been some serious talk in Europe recently of the need for an international spawn-research centre. Such a desirable adjunct may never materialise, on financial grounds only; and in the meantime the more serious spawn plants carry on their own private research, realising that until more fundamental data are available they must expect occasional inconsistencies in the behaviour of their strains, and complaints from choleric growers. Spawns are not invariably blameless—I cannot understand why the makers are so ultra-sensitive about the fact—but in the great majority of cases where the spawn is blamed the grower is probably at fault.

2. Mushrooms are grown from spawn planted in **compost**. Our growing medium is the least consistent material we use, and may be one-third responsible for our crop variations.

We can take horse-manure or synthetic compost, mix it, chop it, wet it, and do all the composting in the house. We can compost it entirely outside, with a short, final "conditioning" in the house. We can split the job into two, and do one phase outside and the other inside. We can, in fact, adopt a variety of techniques with a marvellous range of sizes and shapes of stacks and intervals between turns. The resulting yields will differ, but probably no more than if we attempt to follow exactly the same procedure every time.

No-one, least of all the grower, knows exactly what goes on in the compost heap; but having decided which method we shall use, we can hope in time to learn more about it and so reduce the variations between one stack and the next. A standard procedure should be aimed at, though it is bound to be frustrating, because the material varies enormously, especially the straw, and because the changing seasons profoundly influence the composting process.

To-day the tendency seems to be to compost in the open so that as much air as possible can get into the stack. But there is already sufficient evidence to persuade me that the development of composting in a controlled environment is awaiting only the introduction of that kind of capital.

3. Mushrooms are grown from spawn planted in compost which is covered with a layer of comparatively inert material referred to as the **casing**. Within the past five years practically every grower in Britain has changed from a variety of casing soils to a variety of peats. (Having revolutionized the Industry by demonstrating the value of peat, thereby unwittingly removing the brake on expansion, the industry's own research station was promptly abandoned. But that is by the way).

We know next to nothing about the function of the casing layer and less about the causes of fruiting. We know that mushroom mycelium favours a pH between 7 and 8, and that an unfavourable environment encourages fructification; so we see to it that our casing is neutral or a shade above it! We know that mycelium loves moist conditions, so we keep the casing as damp as we dare! And so on. In fact, we do our best to discourage pin-heading, yet such is our ignorance that most of us have so far managed to stay in business.

4. Mushrooms are grown from spawn in cased compost placed in a highly variable climatic **environment**. There is little doubt that, if we knew precisely the ideal environment at respective stages in the mushroom cycle, it would be economic to build air-conditioned houses; but I know of no comprehensive study of this nature now in progress in Britain which is likely to be published. So the majority of us allow the force and direction and temperature and humidity of the wind to govern very largely the weight of our crop and its quality. One of the few remaining virtues of the Tray System is that it compels a grower to resort to fans!

5. Mushrooms grown from spawn in cased compost in an uncontrolled environment are mostly **offered for sale** on the fresh market where prices collapse if a spell of warm weather coincides with heavy flushing. As a nation we are the third largest producers of mushrooms in the world. Long ago France and the United States resorted to canning and processing to help stabilize a vulnerable economy; yet the quantity we conserve is almost negligible—perhaps because we hesitate to put ourselves at the mercy of the canners. But probably five million pounds were sold at less than cost this summer, and some could not be sold at all.

It seems to be of singular importance to the marketing of our product that we remove the lowest grades and all stalks from the fresh market, and process them in some way. The danger lies in the possibility that, having accustomed the consumer to conserved mushrooms, we may open the door to a flood of imports. European Free Trade could be very serious for the Mushroom Industry here, for I doubt if any other country's costs of production are as high as ours.

6. The Industry has benefited and will continue to benefit from the existence of its own **organization**: beginners can take the word of pre-war growers on that point, and all should join the MGA at the outset of their hazardous career. Begun as a mutual-aid group, the MGA seemed at one time to be developing into a social club, but it is now very properly functioning as a trade protection society.

Incidentally, there has recently been a noticeable change in the general picture. Growers are becoming more reticent, thinking it stupid to share experiences too openly with their competitors. This tendency is not confined to the short-sighted; some of our more intelligent growers fully realise that the preserving of our little secrets means the perpetuation of our abysmal ignorance, but feel that anything which at this moment would increase the output of mushrooms from every farm would merely depress prices further.

7. This year, too, has seen an intensified rate of **expansion**. I am the last person to criticize another's wish to build more houses, but the net result of Supply increasing faster than Demand is the necessity to work harder for the same or a lower reward.

One cynic suggested this would do us all good, going so far as to say that, if it were in his power, he would force prices down deliberately to rid the Industry of the less efficient growers. While I do not accept this ruthless philosophy, lower prices certainly stimulate the search for increased efficiency, and we have in general been far too complacent.

8. What of **the future**? I am much concerned over the conclusion some have reached that the days of the small grower are numbered. I do not know if it is an accurate assessment, but it may well be. Certainly the newest ideas demand a great deal more money than used to be required. And if new farms need a heavy investment, what is the impact going to be should a financier or a wealthy industrialist enter our under-capitalised ranks?

Probably he would first approach the British Association of Consultants, of which I am a member. Probably he would be referred to me. Probably my advice would be as follows:

(a) A private spawn plant would obviously be economically desirable on any farm whose annual spawn bill approaches £2,000. Alongside, research would be started on strains designed for his way of growing.

(b) I would not expect a businessman to tolerate for long our present composting confusion and its susceptibility to the elements, and I would advise experimentation with rack-and-pinion and/or chimney devices already patented and published.

(c) I would counsel the building of cropping houses in which there was a considerable degree of environmental control.

(d) I would suggest that all but the best quality mushrooms were processed on the site in some way and, if possible, exported.

That is the kind of advice I would offer a newcomer able to afford these dreams—and my fees ! If his bank balance were too modest I would say, quite simply, Don't !

The problems facing the beginner are those which face all growers, large and small—but especially the small ones—and they are epitomised in one word: Survival. Newcomers cannot be expected to realise this fact; established growers should no longer ignore it.

THAT MUSHROOM QUESTIONNAIRE

By F. W. TOOVEY

Director, Glasshouse Crops Research Institute, Littlehampton

Towards the end of last year we distributed to readers of this Bulletin a questionnaire seeking information from growers on their cultural practice and problems. Distribution was arranged with the active co-operation of the MGA, to whose Executive Committee we are greatly indebted for their interest and support. It is understood that about 550 copies of the questionnaire were sent out altogether, and it is hoped that a copy of it will have reached all growers in this country who are on the MGA's list.

At first sight the questionnaire may have seemed a somewhat formidable document, but it had been carefully drafted and it is believed that its completion did not present any great difficulty. Advice on the framing of the questions was given by the MGA's Research Committee, and by Dr. R. L. Edwards, the Director of the former Yaxley Research Station.

This was the third occasion on which mushroom growers had been approached in this manner, similar questionnaires having been sent out in 1950 and 1952. The main object was to bring to our attention the more important problems requiring study and to show up any association there might be between these problems and cultural practice. We were also anxious to find out where the important diseases and pests occurred so that we could, if necessary, go and study them on the spot and collect material. It was felt that the information so obtained would be invaluable to us in shaping our research programme.

There was a reasonably good response, and by the closing date, which we had to fix for 16th February, 1957, 79 completed copies of the questionnaire had been returned. It is of interest that this is almost exactly the same number of replies as was received to the 1952 questionnaire. We are most grateful to all those growers who so willingly co-operated in this enquiry; although it will undoubtedly have put them to some trouble they have the satisfaction of knowing that they have made a very useful contribution to the work of the Institute.

The replies covered a wide variety of conditions. The farms represented ranged in size from small ones with up to 5,000 square feet of bed space to large ones with over 30,000 square feet of cropping area. They also varied in age from the relatively new, occupied for two years or less, to those which had been cropped for twenty years or more.

It has been estimated that the replies probably cover about one-sixth of the mushroom growing industry—not a bad sample for a survey of this nature. With such a large proportion of the industry not represented, however, we must be somewhat guarded in the conclusions drawn from the census, and I hope that what is said subsequently will be read with this reservation in mind.

Since the closing date our scientific staff have been busy tabulating and analysing the data. To facilitate this the information given on the questionnaires returned to us has been recorded on punched cards by means of a simple coding system. In this way it has been recorded in a permanent manner and can be used for any further analysis that may subsequently appear desirable. I propose to leave my colleagues to report the results of their studies, and this they will do in a series of short articles which I hope the Editor will be good enough to publish in the Bulletin. Some reference to the results will also have been made in the papers they presented at the Southport Conference.

My purpose is to introduce the articles specifically dealing with the results of the questionnaire. Mr. Flegg starts the ball rolling with an interesting study of the trends in growing methods which have become apparent since the previous enquiry was made in 1952. From this he concludes that the industry is not slow to change its methods in the face of new ideas, which confirms the view that mushroom growers are among the more progressive members of the horticultural community. Mr. Flegg will then go on to present a survey of cultural practices as evident at the present time, and will wind up with a summary of the research on cultural problems that appears to be necessary as indicated by growers' replies. Miss Gandy will follow with an account of the disease situation, with particular reference to those mysterious disorders which go by a variety of names, the best known of which is "La France" disease. Finally, our entomologists, Dr. Hussey and Mr. Wyatt, will deal with the information obtained on insect pests and the implications for research.

To me, as Director of Research, it is of course the suggestions made by growers for problems requiring study which are of the greatest interest, and they will be taken fully into account in planning our research programme. Nevertheless, as I pointed out at Eastbourne last year, there is always a risk in any enquiry of this nature, that the more

obvious problems will be emphasized to the exclusion of those which although no less important may not strike the grower so forcibly. As I said then we shall try not to lose sight of these latter problems, but they may involve research of a rather fundamental nature. Fortunately, I can take the opportunity of announcing that Treasury approval has now been received for the Institute's new mushroom research buildings which have been in the planning stage for so long, and there is every hope that they will be erected without much further delay. They will of course give a tremendous fillip to our mushroom research, but I should not like to minimize the value of the work our mushroom staff have been doing during the past year with the slenderest of resources. I think it will be evident from the papers they will present at Southport that it has been a year of good solid achievement, and a number of interesting and important new lines have been opened up. When the new research buildings can be brought into use, probably in the spring of next year, it should be possible to make rapid progress in following up these investigations and in developing others. As a basis for this more extended programme the replies we have received to our questionnaire should prove invaluable, and I would once again offer my warmest thanks to all those growers who have readily helped us in this way.



TRENDS IN MUSHROOM GROWING METHODS, 1952-56

By P. B. FLEGG

Glasshouse Crops Research Institute, Littlehampton

In this paper a comparison is made between growing methods in 1952 and those in 1956 as disclosed by the replies to questionnaires sent out in those two years. A report of the 1952 survey was published by Dr. R. L. Edwards in 1954 (*MGA Bull.* 55, pp. 231-2).

Over 80 replies were eventually received to the questionnaire sent out in 1956, from the Glasshouse Crops Research Institute, but only 79 were used in this survey, the others arriving too late for consideration. The total annual yield of the farms represented by the replies used has been estimated from the details given to be between 5-6 million pounds. Accurate information on the number of growers in the country or on annual production is lacking, but it is reasonable to surmise that the sample represented by the 79 replies considered is approximately 15% of the total number of growers and roughly the same percentage of the total annual production of Great Britain.

The table shows the percentage of growers who stated in their replies that they used the specified materials or methods. Also in this table are the corresponding figures obtained by Dr. Edwards from the questionnaire sent out in 1952. A comparison between the results of the two questionnaires shows certain trends over the past few years which should be of considerable interest to the industry itself and to those engaged in supplying the industry with its basic requirements.

From the 1952 figures it is obvious that many growers were using

TABLE

| Method of growing or material used | Percentage of growers using method or material stated | |
|--|--|------|
| | 1956 | 1952 |
| Trays only | 42 | 25 |
| Trays, total | 49 | 57 |
| Shelves only | 52 | 36 |
| Shelves, total | 57 | 75 |
| Both trays and shelves | 6 | — |
| Floor or ridge beds | 3 | 16 |
| Horse manure, heavy | 44 | 45 |
| Horse manure, light | 77 | 54 |
| Horse manure, light fortified | 73 | 30 |
| Synthetic compost | 6 | 8 |
| Short composting (<i>i.e.</i> , less than 14 days in the stack) | 32 | 18 |
| Peak heating: | | |
| with live steam | 44 | 34 |
| without live steam | 46 | 45 |
| No peak heating | 10 | 21 |
| Casing soil: | | |
| from own site | 10 | 57 |
| imported | 4 | 44 |
| Artificial mixtures (<i>i.e.</i> , peat mixtures) | 86 | 6 |
| Ventilation: | | |
| roof or floor vents | 91 | 70 |
| fans | 50 | 39 |
| Watering: | | |
| rose only | 84 | — |
| mist only | 8 | — |
| both | 8 | — |

both trays and shelves on the same farm, presumably testing one method against the other. By 1956 this question appears, on the whole, to have been settled, for the proportion of growers who then used both systems was only 6%. It is particularly interesting to note that just as many growers have decided on shelves as have favoured the tray system. The number of growers using either system only has increased to roughly the same extent; shelves are still the more popular, however. Floor and ridge beds have almost disappeared from the scene, and only 3% of the growers replying to the 1956 questionnaire used this method of cultivation.

There have also been changes in composting materials and methods. It is perhaps not surprising to find that in 1956 many more growers were using light or racing stable manure and that the majority who used it also fortified it with activators or other animal manures. The proportion of growers who used heavy horse manure was practically unchanged, but most of them used light manure as well. These changes are probably more due to circumstances than preference. It is likely that supplies of heavy horse manure are on the decrease. Research at Yaxley and practical experience elsewhere have shown that fortified racing stable manure can be used as a substitute for heavy manure and this has been adopted in preference to the alternative, synthetic compost. Although the activators developed for making synthetic compost are

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widely used as a means of fortifying light manure, synthetic compost, as such, is now used by only 6% of growers, rather fewer, if anything, than those using it in 1952.

In recent years there has been much interest in short composting methods and this procedure is evidently on the increase; about one-third of the growers appeared to be using it in the 1956 survey compared with 18% in the earlier survey.

Peak heating is still considered important by most growers. More than 20% of those responding to the 1952 survey did not peak heat, whereas in 1956 this figure had dropped to 10%. The use of live steam for peak-heating has increased to such an extent that of the growers who practise peak-heating almost half now use live steam.

Probably the biggest change in cultural methods is from the use of soil to the use of peat mixtures as a casing layer. In 1952 only 6% stated that they used artificial mixtures, but in 1956 peat mixtures were used by 86% of the growers in the survey. Thus within four years there has been an almost complete change-over. Of the 14% still using soil, most use soil dug from their own site while a few obtain their supplies from elsewhere.

Although there is no information from the earlier survey as to the types of spray used for watering beds it is reasonably certain that most growers used a rose at that time. Despite the recent introduction of mist sprayers giving small droplet sizes, 92% of growers still use a rose and 84% use only this method of watering. The reason may be that the problem of panning, which the mist sprayer was intended to overcome, is not so great with peat mixtures as with soil.

The need for the ventilation of cropping houses is still in the forefront of growers' minds, and the 1956 questionnaire showed that there has been a general increase in the numbers of growers using roof or floor vents and fans. Half the growers in the sample reported the use of fans in 1956.

Considering that the gap between the two surveys was only four years, the number of changes in cultural practice which have become apparent is remarkable. The industry is obviously not slow to adopt new ideas or to adapt itself to changing conditions.

MGA CHAIRMAN ON TELEVISION



Mr. G. V. Allen, Chairman of the MGA, appeared on the television programme "Mainly for Women" from the B.B.C. Studios at Lime Grove, Shepherds Bush, London, W.12, on Thursday afternoon, 5th September. Mr. Allen was interviewed by that well-known television personality, Miss Joan Gilbert. In the picture herewith Miss Gilbert is seen with Mr. Allen just before the programme commenced—not on a seat in some delightful

garden but in a corner of the studio amongst the "props."

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WORLD'S PRESS DIGEST

Mushrooms are still a little hard to push, and plenty are going out as low as 1s. 6d. to 2s. lb. (*Grower*, August, 10/57). Lighter supplies of mushrooms are not reflected in prices (*Fruit Trades' Journal*, August 10/57). Quantities of mushrooms were lighter than usual and they were evoking little interest (*Nurseryman & Seedsman*, August 15/57). The weather brought mushrooms well back into favour this week. On Thursday best buttons made 5s. per lb. (*Grower*, August 17/57). More mushrooms were on the market this week, and the price fell from last week's top of 5s. per lb. to make 4s. (*Grower*, August 24/57).

The American Mushroom Institute's two-year effort for a State appropriation for mushroom research bore fruit with the signing of a 50,000-dollar Bill by Pennsylvania Governor George Leader on 19th July. The money, the first assigned specifically by the State for mushroom research, will be used for experimental research houses and for research into the communicable mushroom diseases and other phases of the industry.

AMI News, July /57.

Mushrooms which have been picked and kept in cold storage are not popular at Covent Garden. It is said that those kept in this way usually arrive slimy owing to the moisture condensing on the cups. It is thought that air-conditioning of the houses (now being tried by at least one firm) is a better answer to seasonal gluts. *Grower*, August 10/57.

Plans by the giant American canning firm, the Campbell Soup Company, to commence the production of canned foods in England are understood to be well in hand. *Packaged Food Selling*, August/57.

A system of glasshouse ventilation incorporating galvanised steel ducts delivering filtered air is produced by Hopes' Heating & Engineering Ltd., Halford Works, Smethwick.

Agricultural & Horticultural Engineering Abstracts 8, 3, 1957.

A two-wheeled, three-ton capacity, combined manure spreader and self-emptying trailer, p.t.o. driven through a safety slip clutch, is being manufactured by Bamfords Ltd., of Uttoxeter, Staffs. An upper toothed cylinder, a rotating worm unit, and a third lower beater constitute the spreading mechanism, which is easily removed from the trailer. The floor conveyor speed is adjustable to give five rates of feed.

Agricultural & Horticultural Engineering Abstracts 8, 2, 1957.

It is very noticeable how many tray growers are looking longingly at and reaching out for many of the best aspects of the shelf system. Shelf growers too are attempting to incorporate production methods which were previously regarded as the tray growers' prerogative.

Robert Patterson in *Commercial Grower*, August 2/57.

The announcement that the minimum wage is going up by nine shillings to £7 10s. a week follows closely on the heels of the news that postage and telephone charges are to be increased. Altogether with the new higher price for coal we have suffered some pretty heavy body blows during the past week or so.

"Wayfarer" in *Nurseryman & Seedsman*, August 8/57.

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SUPPLIERS OF SPAWN SINCE 1910

Outlining the public relations programme of the American Mushroom Institute, Robert Kornfeld pointed out that with about 60 calories to the pound, and with a very high protein content for a vegetable, mushrooms had a fine story to tell modern diners. *AMI News*, July/57.

Copies of the mushroom film, "Commercial Mushroom Culture," can be purchased from the American Mushroom Institute. The price for a colour copy is 95 dollars and for black-and-white 75 dollars. *AMI News*, July/57.

Divert more of your crop to the fresh market, mushroom growers are being urged these days. *AMI News*, July/57.

An attendance of 215 at the Mushroom Short Course at the Pennsylvania State University in June encourages the industry to continue such sessions in future years. But we were especially disappointed with the turnout from the "heart of the industry," the Kennett Square, Toughkenamon and Oxford areas of Pennsylvania.

Editorial in *AMI News*, July/57.

Research people are painfully conscious that converting their efforts into business prosperity requires more direct top management assistance than do the efforts of any other segment of a modern business organization. They wonder whether top management realizes this. To a considerable extent, industrial research suffers from the fact that it has been so widely accepted but so little understood. Not science, but industrial use of science and scientists, had produced our present high level of living and industrial activity.

Clifford F. Rassweiler in *Chemistry and Industry*, June 8/57.

Six new canned poultry products are being introduced into the British market this summer by McCall & Co. Ltd. All packs are boneless and are prepared from top-grade Polish meats. Among them are Roast Goose with Mushrooms.

Packaged Food Selling, August/57.

Since 1935 there seems to be no further record of *Heleococcum aurantiacum*, and compost samples examined here have shown no signs of this fungus. This may be due, so far as mushroom compost is concerned, to improved methods of preparation and pasteurization, causing almost complete elimination of the more fragile weed fungi present. It was somewhat surprising, therefore, to find *Heleococcum aurantiacum* once more in compost samples in February of this year, after a lapse of twenty-two years.

F. C. Wood in *Nature*, August 10/57.

An interesting version of the Wayne contactless self-winding electric cable reel is that in which the cable is paid off in opposite directions. It has been developed by Power House Components Ltd., Wayne House, Nottingham.

Safety Equipment & Industrial Clothing, August/57.

On 1st August regulations came into force making it compulsory for first-aid equipment to be provided on all agricultural holdings where workers are employed. *Agriculture*, August/57.



Are you satisfied with your composting?



if not the routine use of

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and Worthing*

The long overdue transfer of *Pseudobalsamia microspora* Diehl and Lambert from the Tuberales to the Eurotiales is proposed. Since no present genus of the Eurotiales appears appropriate to the organism, I propose the name *Diehliomyces* in honour of Dr. W. W. Diehl, who carefully worked out the life history of the fungus as first described and as far as is still known. A new and fuller description is given of *Diehliomyces microsporus* (Diehl & Lambert) comb. nov.

Helen M. Gilkey in *Mycologia* 46, 6 (Nov.—Dec./54).

Every French exporter gets a bonus of 20 per cent. on what he sells abroad. This means 20 per cent. undercutting here on many fruits, more vegetables, and still more flowers. *Grower Editorial*, August 17/57.

Preliminary tests indicate that positive charges predominate on basidiospores of *Agaricus campestris*, *Pholiota squarrosa* and *Flammula carbonaria*. On the other hand, negative charges seem to predominate on basidiospores of *Coprinus micaceus*, *C. hiascens* and *Polyporus squamosus*. The phenomenon raises a number of problems. (Among those listed is: Is it causally connected with the still mysterious spore discharge mechanism of basidiomycetes?)

P. H. Gregory in *Nature*, August 17/57.

Mr. C. R. Rasmussen, director of mushroom research at the Royal Veterinary and Agricultural College, Copenhagen, has been told by the college authorities that they can no longer afford to provide him with an assistant. There are far too few skilled scientists at work in this field, and it is a pity one of the most eminent should be hampered.

Grower, August 24/57.

The trend over the past few seasons has altered, largely from the use of insecticides in spray form to atomising concentrates. Perhaps the most notable of these atomising concentrates in Basudin.

Memo from Monro, Summer/57.

Findus, by far the biggest Swedish firm in the quick-frozen food business, are launching a sales drive all over Europe—and above all in Britain Mushrooms are canned or made into soup.

H. G. Schaffer in *Grower*, August 24/57.

References:

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AMI News, 20 West State Street, Avondale, Pennsylvania, U.S.A.
B. & G. Review, 27 St. James Street, Covent Garden Market, London, W.C.2.
Biological Abstracts, University of Pennsylvania, Philadelphia 4, Pa., USA.
Business, 109/119 Waterloo Road, London, S.E.1.
Chemistry & Industry, Society of Chemical Industry, 14 Belgrave Square, London, S.W.1.
Commercial Grower, 154 Fleet Street, London, E.C.4.
Digest of Equipment, 3 Cranston Drive, East Didsbury, Manchester 20.
Food Investigation, H.M.S.O., York House, Kingsway, London, W.C.2.
Fruit Trades' Journal, 6/7 Gough Square, Fleet Street, London, E.C.
Grower, 49 Doughty Street, London, W.C.1.
Memo. from Monro, Geo. Monro Ltd, Waltham Cross, Herts.
Mycologia, New York Botanical Garden, Prince Street, Lancaster, Pennsylvania.
Packaged Food Selling, 110 Fleet Street, London, E.C.4.
Safety Equipment & Industrial Clothing, 9 Gough Square, Fleet Street, London, E.C.4.

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An outstanding feature of our cropping has been the really excellent quality of mushroom produced. We are delighted with the results and you may use this tribute as you wish.

Yours faithfully,

(signed) A. Sanford.

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Horticultural Abstracts, Commonwealth Agricultural Bureaux, Farnham Royal.
Mushroom News, W. Darlington & Sons Ltd., Southcourt Road, Worthing, Sussex.
Nature, Macmillan & Co. Ltd., St. Martin's Street, London, W.C.2.
Nurseryman & Seedsman, 62 Doughty Street, London, W.C.1.
Phytopathology, Monumental Printing Co., Baltimore, Maryland, USA.
Produce Packaging, Agriculture House, Knightsbridge, London, S.W.1.
Soil Science, The Williams & Williams Co., Baltimore 2, Maryland, USA.
Transactions of the British Mycological Society, Cambridge University Press, Bentley House, London, N.W.1.

If the journals referred to are generally available, they are most easily obtained by placing an order with your bookseller or stationer.

NEW MUSHROOM DISEASE?

A number of mushroom farms in widely scattered areas have been affected by a rather puzzling disease which, it is believed in some quarters although no definite proof has so far been forthcoming, is the dreaded La France, first heard of in America a few years ago (1948).

Already all grower members of the MGA in the United Kingdom, have received a questionnaire on the subject—a step taken by the Association in an effort to assist the experts to find a common factor linking all affected farms.

Experts in this country have been making a close study of the matter for some time and their opinions and conclusions—alas nothing really conclusive has yet emerged—are to be supplemented by those of Dr. Sinden and Mrs. Hauser who are shortly to visit this country in order to study the disease at first hand.

Among the farms affected is that of the MGA Chairman, Mr. G. V. Allen, of Bilting, Ashford, Kent, who is putting through a stringent hygiene programme in an effort to avoid a complete if temporary close down of his farm.

It is possible to "crop through" the disease for months on end although, as has already been proved, under certain conditions the disease develops very quickly and complete crop failures result.

On one farm the first signs—brown or "off white" mushrooms, dead like to the touch and deteriorating to a stinking brown mess within a day or two—appeared in late flushes but, in time, the trouble appeared earlier until the very mycelium, before the pinhead stage, was affected and growth disappeared. Some mushrooms may be found to be existing by a single thread like root, the top two inches of the compost may be quite dead.

In the early stages the mushrooms appear "weedy like," with some long stalked, some with small caps often tilted. Some affected mushrooms have brown flecking on the caps, others in appearance quite healthy, may disclose this brown flecking and streaking when cut in two. There are complaints of the keeping qualities of what appear to be quite healthy mushrooms.

Whilst it is emphasised that there is no need for panic growers are urged to keep a close watch on their crops and to tighten up their hygiene methods.

?

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Said, Mr. Allen, "The key to the whole situation must lie in farm hygiene and routine methods of hygiene should be examined and overhauled if necessary every now and again. I hope all the Grower Members who received the questionnaire and who think they may have had some experience of this disease, will fill the form in and send it back. From those replies a clue to the cause may emerge. In any case the information so obtained will prove most useful to the experts."

DEATH OF MR. HERBERT MOUNT

Mr. Herbert Mount, director of the firm of H. Mount & Sons Ltd., Littlebourne, Canterbury, makers of the well-known Mount Spawn, died suddenly on 29th August. He was in his 80th year. Mr. Mount, whose activities in the field of horticulture were wide and varied, took a particular interest in mushrooms and his long support for the industry was highly valued by growers and by the Mushroom Growers' Association.



MR. WILLIAM DYKE

The death has occurred at the age of 86 of Mr. William Dyke, of Royden, Essex. Among his publications was "Mushroom Culture" (1925).



LAST MONTH'S PUBLICITY CONTRIBUTIONS

*†Spawn Merchants:-

Monlough Food Production Co. Ltd., Ballygowan, Belfast.

W. Darlington & Sons Ltd., Southsort Road, Worthing.

S. A. F. Sampson Ltd., Oving, Chichester, Sussex.

Pinkerton's Scottish Mushroom Laboratories, Millerston, Glasgow.

Salesmen:-

†C. Snowdon & Co. Ltd., Castlefolds Market, Sheffield 4 18 0

Others

P. C. Brown & Co., Biddulph Stoke-on-Trent 10 10 0

*Contributions from spawn merchants are not for publication.

†Previous contributions already acknowledged.



SOUTHPORT CONFERENCE

Over 200 people attended the two-day Mushroom Developments Conference organised by the MGA, which took place at the Prince of Wales Hotel, Southport, on 2nd and 3rd October.

The Conference was opened by Mr. G. V. Allen, MGA Chairman.

In the Mushroom Competitions, six of the Cups were shared equally by Loddington Farms Ltd., of Maidstone, and the Broadham Produce Co. Ltd., of Oxted. Mr. T. Orritt of Burscough Bridge, was the other Cup winner. A full report, with pictures, will appear next month. The papers presented at the Conference will appear in the *Bulletin* in due course.

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SHELF-TRAY CONTROVERSY

ROBERT PATTERSON, B.Sc., B.Ag. (Hons.)

Will the shelf-tray controversy die a natural death? It looks probable that it will because there has during the last few years been a remarkable *rapprochement* between the two camps. Sense has at last prevailed and instead of the brickbats there appears to be a genuine desire on the part of either protagonist to give and take.

This levelling of differences has, no doubt, been more pronounced on the tray side and it is very noticeable how many tray growers are looking longingly at, and reaching out for many of the best aspects of the shelf system. Shelf growers too are attempting to incorporate production methods which were previously regarded as the tray growers' prerogative.

Heating Only

Quite recently I was in a tray grower's peak heat and spawn running room and trays were stacked in the checker board fashion which one normally finds in the cropping room. On enquiry I was told that it facilitated both peak heating and spawning. I suggested leaving them there for casing and cropping, but the grower said "no," that this was a peak heat room and not a cropping room. I presumed, therefore, that his cropping rooms were not well enough insulated for peak heating but soon discovered that, of necessity, they were, because the grower had to cook-out his houses at the end of each crop, and strangely enough he admitted that this cooking-out was necessary because tray cropping rooms are less fortunate than shelf houses which are normally cleaned up by three or four peak heats a year. As a participant in both methods of growing this struck me as a very interesting point. I began to wonder, will tray growers' peak heat houses, as such, disappear eventually.

The Way Back

I discussed the point with another tray grower who actually peak heats in the growing room and he admitted quite openly that he was almost back to a sort of shelf system. He too, had found that he would have to revert to end of crop cooking-out unless he could get the peak heating done in the cropping room. Furthermore, this latter grower's trays never come outside the cropping room. A large entrance door allows a lorry to reverse in and the old compost is emptied into it and the trays left to one side for brushing and cleaning. The house and its contents are cleaned in much the same way as a shelf house would be. The fresh compost is brought in, the trays are filled and placed in the final cropping position, peaked, cased and cropped. He maintained that there was no call to cook-out a house which had been peak heated prior to the start of cropping. In fact it was the greatest eye opener I had had on tray growing and I had to admit that he was probably on the right lines.

I then thought of the tray growers (quite a few throughout the country) who peak heat and run the spawn in trays and then transfer the compost to shelves. These cross-bred tray : shelf men are just as enthusiastic about their hybrid systems as shelf or tray growers are about theirs.

I pointed out earlier that the shelf-tray amalgamation was mutual but in fact the approach of the tray system to the shelf has been more pronounced. Shelf growers have, however, adopted many predominantly tray features where these are practical and beneficial. Many shelf growers who a decade or so ago were getting only $2\frac{1}{2}$ crops a year from their houses are now getting four crops a year. Higher temperatures during running of spawn, the use of the right spawn, higher cropping temperatures and a shorter cropping period have all tended to speed up crops on shelves.

Why shelf growers did not adopt these practices sooner it is hard to understand or explain. I have a feeling that when the tray system was launched in this country, many shelf growers, because they regarded the new tray growers as unmitigated upstarts, were slow to pay heed to the details of their methods. It is only comparatively recently that the belief in the " DIVINE-RIGHT-OF-TRAY-GROWERS " has been divested of some of its glory.

The tray system began in America when some growers started using warehouses, ice houses and caves for mushroom growing. They soon found that in these structures it was well nigh impossible to obtain proper peak heat. So they decided that the peak heating would have to be done elsewhere and, to achieve this, the compost would have to be in mobile containers. A tray, representing a section of shelf bed, but capable of being handled by two persons, was soon devised. So from this small beginning a two zone tray system has evolved.

Just Fashionable?

The tray system, like many other features of our civilisation, was born of necessity but is being practised by many because it is fashionable.

All mushroom growers do not attach the same importance to the various cultural activities. A shelf grower's aim is to move his compost about as little as possible. He wants to get it into his shelves as quickly as possible and let it stay there in the one position right to the end of the crop. A tray grower does not hesitate to move his compost three or four times during the crop cycle.

There is no doubt that the tray method suits some systems best and does lend itself to a greater degree of mechanization. The shelf method still has its ardent advocates but I can foresee the day when some growers will just be as enthusiastic about their " trelf " system which will become an ideal combination of the present tray and shelf systems.

CONGRATULATIONS

Congratulations to Dr. W. E. Shewell-Cooper, M.B.E., MGA member and Director of the Horticultural Educational and Advisory Bureau, Thaxted, on his being honoured by the French Government with the Order " Chevalier du Mérite Agricole."

R. A. Lewis, Manager to the Pixie Mushroom Co., Kurrajong, N.S.W., Australia, writes about:—

MUSHROOM GROWING IN AUSTRALIA

Although mushrooms have been grown commercially in Australia since the 1930's, it has not been until the last few years that the crop has assumed economic importance. The rapid rise in production has been due mainly to the interest of canning companies who have offered a price which has compared favourably with that obtained at produce markets.

Most of the mushrooms are grown in the areas adjacent to Sydney, the Windsor district being the main producer, with practically all the mushrooms grown in outdoor ridge beds. The season extends from about April to November and picking goes on even in the colder mid-winter months when the mean temperature is approximately 54 degrees F. The beds are covered with a layer of long straw and then hessian bags, and in spite of the large amount of work involved in picking and tending the beds, there are quite a number of growers with 20,000 sq. ft. of ridge beds or more. Most of the composting is done by hand and the tendency is to very long composting with 5 or 6 turns before making the beds. Cow manure and poultry manure—plus straw—are the most popular materials composted and very few ridge bed growers prepare synthetic composts. Straw is relatively expensive here at about £15 per ton. The ridge-bed growers seem to be amazingly free of pests and diseases. They rely on liberal use of Gammexane dust and setting their beds in a different spot each year, most of the growers having 20 or more acres at their disposal.

In addition to the outdoor growers there is an increasing number of producers with specially constructed growing sheds, as in the U.K. With these growers, peak-heating and all the other accepted principles of modern cultivation are practised.

There are also five or six fairly large growers using the 2-zone tray system with dis-used railway tunnels as their cropping rooms.

Selling prices at the Sydney Markets approximate 3/6 to 6/- lb. for large opens and 5/- to 8/- for better quality mushrooms, with few bringing above 6/- in the spring. The canneries, who take the bulk of production, pay approximately 4/- for ridge bed mushrooms, 4/6 for indoor, with long stalks (at growers' gate; cases supplied). **During this year (1957), and for the first time, there has been an excess of growers over cannery contracts available.**

There has recently been formed a Mushroom Growers' Section within Australian Primary Producers Union and this has attracted a fairly large membership. It has mainly concerned itself with economic matters so far.

No account of the mushroom industry in Australia would be complete without mention of the late Raymond Mas who was its pioneer and the author of a short book on the subject. He was our first commercial spawn producer and grew mushrooms commercially in the uncompleted railway tunnel under the heart of Sydney in the 1930's.

MUSHROOMS MAKE NEWS AGAIN!

REPORT ON TEA CENTRE EXHIBITION

By GUY REED

The Members of the MGA are entitled to indulge in a further tinge of pride. On many occasions in the past few years the MGA has been held up by others as an enterprising organisation that blazes new trails in sales promotion.

The Exhibition at the Tea Centre on Regent Street, during the week of 9th—13th September, is now conceded to be one of the most successful show held there in the long history of that Exhibition Hall. Prior to the Exhibition, our Chairman, Mr. Allen, spoke of it on B.B.C. television. A feature article dealt with it in the *Daily Telegraph* and advance publicity was sent to provincial newspapers. The total attendance figures reached almost 20,000 in the 4½ days. This staggered the permanent staff at the hall—who had not anticipated that mushrooms would cause such tremendous interest. Each day queues of people stretched from the 1st floor, down the stairs and across the ground floor.

Each of eight different lists of Mushroom recipes, prepared by the various participants, had to be reprinted three times during the week to keep up with the demand for them and eight expert cooking demonstrators struggled to make sufficient tasting samples to feed the visitors. A very large quantity of our own leaflet "Winning Ways with Mushrooms" were given away. Again, in the middle of the week, B.B.C. Television in their programme "To-Night" described the Exhibition.



A full view of the Tea Centre window before it was blocked by interested onlookers

The announcer finished by saying "The Exhibition is a 'must' for anyone in London this week."

The display window on Regent Street drew high praise and large crowds which at times reached right across the pavement, to the consternation of the Police! Even after the Centre was closed the window continued to hold the night strollers on crowded Regent Street.

My mushroom delivery van, gaily painted on all sides with huge mushrooms (but without any farm name on it) carried a large sign on top advertising the MUSHROOM EXHIBITION. This was driven around the streets of London by day—in the City between 9 and 10 a.m., in the West End, thronged by visitors to London, during the shopping hours—in the suburbs later, etc. Photographs were sent to Provincial Press showing the driver distributing $\frac{1}{2}$ lb. pre-packs to



A corner of the Tea Centre window showing some of the crowds who were daily attracted

conscious nightly, since the van and sign were illuminated by the bright lights of Piccadilly Circus. (Such is the goodwill towards mushrooms, that no one complained and I have not been invited to attend court!).

To tie in with the name of the exhibition "101 Winning Ways with Mushrooms" the daily prize of 101 Mushrooms was given to the first person who named Sir William Nicholson as the painter—"Mushrooms (1941)" as the title and The Tate Gallery as the place in which the picture, shown in the window, normally hangs. A surprising

number of people entered the competition—the object of which was merely to provide a "news" angle. The entry forms revealed that included among competitors were:—Architects, Draftsmen, Typists, Professional and Commercial Artists, Commissionaires, Economists, Surveyors, Literary Agents, Journalists, Buyers, Students, Barristers, Chartered Accountants, Publishers, Housewives, School Teachers, Chefs, Civil Servants, Clerks, Servicemen.

A press party was held for writers and journalists of Women's magazines and papers, culinary and trade press, leading National and Provincial Newspapers, key B.B.C. and Television people, and the chefs of the leading Hotels and Restaurants. Approximately 150 people attended and this represented the greatest value of the whole event.

ladies in London wearing mushroom shaped hats. Because of the height of the sign it was impossible to find a garage in London high enough to take the van. So the police were persuaded that subject to my accepting the risk of being summoned should a complaint be lodged, the van should be parked on Regent Street near Piccadilly Circus each night! Thus the throngs in this "Centre of the World" were kept Mushroom-



G. W. Baker (Chairman, Publicity Committee), giving a few facts and figures to a Press representative

The Chairman addressed the guests, exhorting them to use mushrooms

still more in their public writings and talks. And to use the Association and Albion Publicity Ltd. (the firm appointed to act for MGA) as a source of any information they require. Each will be followed up and the resulting publicity for mushrooms will be seen throughout the coming year.



One of the cookery demonstrations in progress

formation together with eight lists of recipes. All eight participating concerns (a list of which appears in the enclosed roneoed sheet) agreed that the effectiveness of the show exceeded their most optimistic hopes. Their indebtedness to us for inviting them to participate will without question be repaid many times over by the use of mushrooms in their own publicity. I have already received many assurances of this. This should be extremely powerful and beneficial to us, and you may rest assured that every service will be given them throughout the year.

While the MGA Publicity fund paid the rent of the Hall and covered the cost of the press party the other participating concerns contributed all the food (except mushrooms) given away in thousand of tasting samples, printed the tens of thousands of recipe lists given away, supplied the fuel and the gas cookers and all eight demonstrators and other staff in attendance throughout the week. Everyone benefited and MGA by no means least!

N.B.—Efforts are now being made by Albion Publicity Ltd., to devise a scheme whereby similar exhibitions can be staged in other large cities, without burdening the restricted MGA publicity budget.

A roneoed sheet is enclosed with this bulletin. A copy of this was given to each guest at the press party as background in-



Point of sale. Each day the queue stretched round the corner and down the stairs



The mushroom publicity van in Trafalgar Square—a picture taken early in the day

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SMALL ADVERTISEMENTS—*Contd. from page 356*

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ENERGETIC EXPERIENCED MUSHROOM GROWER, aged 45, biological graduate, wants good managerial job. Box 17.

PARTNERSHIP WANTED in Mushroom Farm: no experience. Prepared to invest £2,000—£2,500. Box 12.

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| Shirley Organics Ltd., Vicarage Wharf, Battersea, S.W.11 .. | .. | 25 | 0 | 0 |
| Stable Manures Ltd., Manure Dealers, Worthing and Newmarket .. | .. | 60 | 0 | 0 |

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| |
|--|
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| W. Darlington & Sons Ltd., Southcourt Road, Worthing. |
| Monlough Food Production Co. Ltd., Ballygowan, Belfast. |
| S. A. F. Sampson Ltd., Oving, Chichester. |
| Geo. Monro Ltd., Hertford Road, Waltham Cross. |
| Pinkerton's Scottish Mushroom Laboratories, Millerston, Glasgow. |
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Continued on page 352

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